

TWO NEW SPECIES OF *CASTILLEJA* (SCROPHULARIACEAE) FROM  
SOUTHERN OAXACA, MEXICO

Guy L. Nesom

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

ABSTRACT

Two new species of *Castilleja* are described from Cerro Quiexobra in southern Oaxaca, México, where they apparently are narrowly endemic. Both are members of sect. *Euchroma* but their relationships lie within different species groups. *Castilleja quiexobrensis* apparently is related to the widespread, primarily Mexican species *C. scorzonrifolia* and *C. nervata*; *C. nivibractea* may be most closely allied with *C. tolucensis* and *C. zempoaltepetlensis*, both of which are relatively restricted in geographic distribution, occurring in high-elevation habitats of southern México.

KEY WORDS: *Castilleja*, Scrophulariaceae, México

It is remarkable to note the discovery of two new species of *Castilleja* apparently growing closely adjacent to one another. These join a group of recently described taxa collected by Andrew McDonald on Cerro Quiexobra in southern Oaxaca, presently included among the following genera: *Ageratina*, *Aphanactis*, *Archibaccharis*, *Erigeron*, *Gnaphaliothamnus*, *Hieracium*, *Nama*, *Sabazia*, *Senecio*, and *Verbesina*. It is likely that these new paintbrushes will also prove to be narrow endemics, but they are as distinctive in morphology as most others in the genus. McDonald collected one other species of *Castilleja* on Cerro Quiexobra, *C. integriflora* L.f., but this species is a member of sect. *Castilleja* (Nesom 1992c) and is distantly related to the two new ones, both of which are members of *Castilleja* sect. *Euchroma* (Nutt.) Benth. (*sensu* Eastwood 1909).

**CASTILLEJA QUIEXOBRENSIS** Nesom, *spec. nov.* TYPE: MEXICO. Oaxaca, Mpio. Miahuatlán, 35 km ESE of Miahuatlán, 5 km NE of Santo Domingo Ozolotepec, Cerro Quiexobra and vicinity, timberline vegetation in open glades along ridges and mountain saddles; dominated below by pine forest; 3650-3800 meters; 16°10'N, 96°15'W; 10 Dec 1989, A. McDonald 2928 (HOLOTYPE: TEX!; Isotype: TEX!).

*Castillejae scorzonrifoliae* Kunth ac *C. nervatae* Eastwood similis sed ab ambobus differt combinatione characterum: caulibus rectis, foliis amplectentibus lobis lineari-lanceolatis, bracteis floralibus flabellati-lobatis, calycibus viridibus annulo distali albo, et corollis exsertis.

Annual herbs from a simple caudex and shallow fibrous roots, stems and herbage with a mixture of eglandular and stipitate-glandular hairs. Stems erect, mostly single from the base, ca. 15-45 cm tall, villous with vitreous hairs 0.8-1.5 mm long, the stipitate-glandular hairs somewhat shorter. Leaves 3-nerved, lanceolate to oblanceolate, 2.5-3.5 cm long, relatively even-sized upward, the lower distinctly clasping but not auriculate, with 1-2 pairs of ascending-divergent, linear-lanceolate lobes or merely toothed near the apex, pilose-hirsute and glandular, stiffly hirsute along the veins, especially on the lower surface. Inflorescence congested, rapidly lengthening at maturity and fruiting; floral bracts 15-20 mm long, about equal or slightly shorter than the calyx, the lower bracts similar to the upper cauline leaves, green, the upper bracts with orange-red, obovate lobes. Calyx 16-20 mm long, constricted below the middle and widening distally, the primary lobes 7-9 mm long, equal in length, green with a white rim ca. 1 mm wide, with truncate-rounded to slightly undulate apices. Corollas 18-25 mm long, galea 10-12 mm long, ca. half the length of the corolla, exerted 3-7 mm, green dorsally with red sides, the dorsal surface sparsely pilose, lower lip of 3, narrow, thick, green teeth 1 mm long; stigma strongly recurved, slightly exerted. Infructescence 15-28 cm long; fruits ovoid, 11-15 mm long, spaced 10-15 mm apart at maturity. Known only from the type collection.

*Castilleja quiexobrensis* is similar and presumably closely related to *C. scorzonifolia* Kunth and *C. nervata* Eastw. (Nesom 1992a) in its stipitate-glandular vestiture, linear-lanceolate leaves, and submedially constricted calyx with equal-length lobes with blunt-rounded apices. It is more similar to *C. nervata* in foliar vestiture but more similar to *C. scorzonifolia* in its straight stems, clasping leaves, and exerted corollas. The new species differs from both in its lobed leaves and bracts. All three species can be distinguished by the following contrasts:

1. Stems slightly zig-zag at the nodes; leaves nonclasping; calyx completely green; corolla not exerted from the calyx. .... *C. nervata*
1. Stems straight; leaves clasping; calyx red or white at the apex; corolla exerted from the calyx.....(2)
2. Leaves and floral bracts entire; calyx red-tipped; taprooted..... *C. scorzonifolia*
2. Leaves and floral bracts lobed; calyx green with a narrow white, apical rim; shallowly fibrous-rooted. .... *C. quiexobrensis*

**CASTILLEJA NIVIBRACTEA** Nesom, *spec. nov.* TYPE: MEXICO. Oaxaca, Mpio. Miahuatlán, 35 km ESE of Miahuatlán, 5 km NE of Santo Domingo Ozolotepec, Cerro Quiexobra, Subalpine glades surrounded by pine forest on ridgetops and mountain saddles; usually dominated by *Lupinus*, *Penstemon*, and miscellaneous forbs; "occasional in glades, common in [the] open pine forest," 3500-3700 meters; 16°10'N, 96°15'W; 3 Oct 1990, A. McDonald 3002 (HOLOTYPE: TEX!).

*Castillejæ konzattii* Fernald *ex* Eastw. similis sed differt vestimento eglanduloso, foliis caulinis lobis lateralibus longioribus, bracteis floralibus plerumque lobarum lateralium 2-binatorum alborum, et calycibus roseis annulo distali albo, sine constrictione submediali.

Perennial herbs from a branching, strongly woody caudex and root; stems and herbage stiffly pilose with vitreous, conspicuously jointed hairs mostly 0.8-1.5 mm long, eglandular. Stems erect, basally ascending, 25-40 cm tall, with few or no branches. Leaves linear-lanceolate, not clasping, 3-veined, the lower 3-5 cm long, 2-3 mm wide, relatively even-sized upward, entire or with a pair of widely divergent, linear lobes on the distal half, the upper with 2-3 pairs of divergent, linear-lanceolate lobes, the basal lobes 10-22 cm long, the distal lobes 4-10 mm long. Inflorescence congested, ca. 3-5 cm long, rapidly lengthening at maturity and fruiting; floral bracts 15-20 mm long, with distinctly white, obovate lobes ("distally white and basally pink during anthesis, pink after anthesis," according to the collection data), scabrous-hispidulous, about equal the calyx length. Calyx 12-14 mm long, even in width from base to tip (not submedially constricted), the primary lobes 6-7 mm long, equal in length, 3 mm wide, truncate-rounded apically, pink with a distal, creamy-white rim 1 mm wide. Corolla 15-17 mm long, the galea green, ca. 7 mm long, ca. half the length of the corolla, densely pilose on the dorsal surface, exserted 2-3 mm from the calyx; stigma erect, barely exserted. Fruits broadly oblong-lanceolate, 8-10 mm long, spaced ca. 1 cm apart in the mature infructescence. Known only from the type collection.

*Castilleja nivibractea* apparently is most closely related to *C. tolucensis* Kunth and *C. zempoaltepetlensis* Nesom, a pair of species from high elevation habitats in southern México (Nesom 1992b). All three produce calyces of even width from base to apex (without the prominent medial or submedial constriction characteristic of the numerous species of the *C. scorzonrifolia* group) and all produce strongly lobed to dissected leaves and bracts. In contrast to the new species, *C. tolucensis* and *C. zempoaltepetlensis* arise from thin rhizomes, produce stipitate glands on stems and leaves, and neither has white-lobed floral bracts, although the latter is distinctive in its white calyx. Among the Mexican species of *Castilleja*, *C. nivibractea* is the only one with white-lobed bracts.

In the Latin diagnosis, *Castilleja nivibractea* is compared to *C. konzattii* (of the *C. scorzonrifolia* group), to which it might run in the artificial key to species of sect. *Euchroma* with lobed leaves and/or floral bracts (Nesom 1992b).

#### ACKNOWLEDGMENTS

I thank Mark Mayfield and Billie Turner for their comments on the manuscript.

#### LITERATURE CITED

- Eastwood, A. 1909. Synopsis of the Mexican and Central American species of *Castilleja*. Contr. Gray Herb. (n. ser.) 36:563-591.
- Nesom, G.L. 1992a. New species and taxonomic evaluations of Mexican *Castilleja* (Scrophulariaceae). *Phytologia* 72:231-252.
- Nesom, G.L. 1992b. A new species of *Castilleja* sect. *Euchroma* (Scrophulariaceae) from Oaxaca, México. *Phytologia* 73:247-250.
- Nesom, G.L. 1992c. Taxonomy of the *Castilleja tenuiflora* group (Scrophulariaceae) in México, with an overview of sect. *Castilleja*. *Phytologia* 73:389-415.